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there arose about twenty-four ordinary single headed dandelion scapes perfectly normal in every respect.

The following year the plants were to a large extent again abnormal but the aggregates of heads were not as large as the preceding year, and were fewer in number. In succeeding years the phenomenon was not noticed as the lawn was kept closely cropped and special efforts made to eradicate all the dandelions, as the plant had by this time become quite a nuisance hereabouts.

Owing to the fact that the spring was moist and warm and the locality was more than ordinarily manured in fall there is little doubt that the peculiar state of the plants was due to extraordinary conditions of nutrition. The specimen collected was as is evident from the plate very young and had not even attained to maturity in bloom. All the scapes were as yet brown in color due to the fact that chlorophyl in the scape and involucre had not developed. Specimens of plants with two or three heads on a scape are quite common but specimens like the one described are quite rare. Plants outside the small patch scattered over the rest of the lawn were to all appearances quite normal.

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## Microscopy Notes.

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### I. SIMPLE METHOD OF EASILY RESOLVING MICROSCOPICAL TEST-OBJECTS.

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A. M. KIRSCH.

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Even the amateur microscopist has come to recognize that the value of a microscopical objective depends on the ease with which it will resolve with perfect clearness certain test objects usually diatoms with delicate markings. One of the most difficult of these diatoms as a test is *Amphipleura pellucida* Kg. the striae of which number about 96,000 to the inch. It is claimed that a good one-twelfth inch immersion lens will bring out these delicate lines to the vision, but the writer has tried this with a number of such objectives under the various directions usually given, but always with very doubtful if any success. In experimenting for a long time with various objectives it was found that the fault lies not with the objectives, nor with the mounting medium usually balsam, but rather with the method of illumination of the test-object.

Abbe has shown that by transmitted light diffraction images are obtained and refraction images by reflected light. Not to enter into a discussion of these different images it suffices to say that the author had spent hours at a time trying to catch a glimpse of the striae and invariably failed, until one day a lucky accident brought them to view. On this occasion while working near a window through which the direct sunlight happened to strike the top of the stage of the microscope, a sudden accidental movement so placed the stand as to exclude the light from the mirror. The direct sunlight fell on the edges of the drop of immersion oil and immediately the markings came out clearly, sharply, and unmistakably. After a certain amount of experimentation it was found that the best results were obtained when the incidence of the direct sunlight took place as nearly as possible parallel to the stage, the microscope being inclined for the purpose, and at right angles to the striae. From this it would seem that the lines are alternate ridges and depressions on the diatom shell and the lines were brought out as contrasts of ridges with their shadows. The method is so easy and simple that the merest beginner in microscopy could bring out the markings without any difficulty. The method has been used with great advantage in our laboratories in determining the markings on the spores of the Myxomycetes, as this characteristic is at times an important factor in the determination of these plants.

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## Notes on Histological Technique.

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### I. A SIMPLIFIED MODIFICATION IN A STAINING METHOD.

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#### J. HUERKAMP.

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The usual method of staining plant tissues with Delafield's haemtoxylin and safranin as described in the common texts of histology and microtechnique, requires that the preparation remain in the latter stain about 12 hours in order that sufficient and satisfactory penetration of the color may result. Tissues of certain plants will take the stain much more rapidly and retain it more tenaciously, while others even after being kept in the stain longer than is ordinarily required can not be made to keep it at all.